Smith, R. E., Smoll, F. L., & Hunt, E. (1977). A system for the behavioral assessment of athletic coaches. *Research Quarterly, 48* (2), 401–407.
Smoll, F. L., & Smith, R. E. (1989). Leadership behavior in sport: A theoretical model and research paradigm. *Journal of Applied Social Psychology, 19*, 1522–1551.
Speh, T. W., & Maltz, A. (2002). *Private warehousing: a snapshot.* Oak Brook, IL: Warehousing and Education Research Council.
Stevens, C. D., & Ash, R. A. (2001). Selecting employees for fit: Personality and preferred managerial style. *Journal of Managerial Issues, 13* (4), 500–517.
Sussman, L., & Finnegan, R. (1998). Coaching the star: Rationale and strategies. *Business Horizons, 41* (2), 47–54.
Talarico, M. (2002). *Manager as coach in a pharmacy benefit management organization: A critical incidents analysis.* Unpublished doctoral dissertation, University of Minnesota.
Thornhill, A., & Saunders, M.N.K. (1998). What if line managers don't realize they're responsible for HR? Lessons from an organization experiencing rapid change. *Personnel Review, 27* (6), 460–476.
Warehousing Education and Research Council. (2001). *Using competencies in the warehouse.* Oak Brook, IL: Author.
Warehousing Education and Research Council. (1999). *A guide to effective motivation and retention programs in the warehouse.* Oak Brook, IL: Author.
Watkins, K. E. (1995). Workplace learning: Changing times, changing practices. In W. F. Spikes (Ed.), *Workplace Learning.* San Francisco: Jossey-Bass.
Webber, A. M. (1993, January–February). What's so new about the new economy? *Harvard Business Review,* 24–42.
Weiss, M. R., & Friedrichs, W. D. (1986). The influence of leader behaviors, coach attributes, and institutional variables on performance and satisfaction of collegiate basketball teams. *Journal of Sport Psychology, 8,* 332–346.
Yarnall, J. (1998). Line managers as career developers: Rhetoric or reality? *Personnel Review, 27* (5), 378–395.
Yukl, G. (1994). *Leadership in organizations* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.
Zemke, R. (1996). The corporate coach. *Training, 33* (12), 24–28.
Zhang, J., Jensen, B. E., & Mann, B. L. (1997). Modification and revision of the leadership scale for sport. *Journal of Sport Behavior, 20* (1), 105–122.

Andrea D. Ellinger is assistant professor of human resource education at the University of Illinois at Urbana-Champaign.

Alexander E. Ellinger is associate professor of marketing and supply chain management in the Culverhouse College of Commerce and Business Administration at the University of Alabama.

Scott B. Keller is assistant professor of logistics and supply chain management in the Eli Broad College of Business at Michigan State University.

An Examination of Learning Transfer System Characteristics Across Organizational Settings

Elwood F. Holton III, Hsin-Chih Chen, Sharon S. Naquin

No previous research in the United States has compared and contrasted learning transfer systems across organizations and training types, primarily because no standard instruments were used in previous research. This study, based on a subset of responses in the Learning Transfer System Inventory response database, is the first to conduct such a comparison. Using a subset of 1,099 respondents, transfer systems are compared across three organization types, eight organizations, and nine types of training. MANOVA and univariate ANOVA were used to compare transfer systems. The results suggest that transfer systems differ across organizational types, organizations, and training types. Implications for HRD practice and future research directions are discussed.

Transfer of learning has long been an important HRD research issue. Since Baldwin and Ford's review of the literature (1988) over a decade ago, considerable progress has been made in understanding factors affecting transfer. Much of the research has focused on training design factors that influence transfer (Kraiger, Salas, & Cannon-Bowers, 1995; Paas, 1992; Warr & Bunce, 1995). Another stream of research has focused on factors in the organizational environment that influence individuals' ability and opportunity to transfer (Rouillier & Goldstein, 1993; Tracey, Tannenbaum, & Kavanaugh, 1995). Other researchers have focused on individual differences that affect the nature and level of transfer (Gist, Bavetta, & Stevens, 1990; Gist, Stevens, & Bavetta, 1991). Finally, recent work has focused on developing instruments to measure transfer and its antecedent factors in the workplace (Holton, Bates, & Ruona, 2000; Holton, Bates, Seyler, & Carvalho, 1997a). Readers seeking a more comprehensive review of the literature on transfer of training should consult Baldwin and Ford (1988), Ford and Weissbein (1997), and Holton, Bates, and Ruona (2000).

Human Resource Development Quarterly, vol. 14, no. 4, Winter 2003

Our primary concern in this article is that the existing research is, for the most part, not action oriented (Holton & Baldwin, 2003). That is, most existing authors have stopped at the point of identifying, describing, or measuring factors that may influence transfer without investigating how those factors might be effectively changed or managed. For example, of the fifty-eight studies included in the two most comprehensive reviews of the transfer literature (Baldwin and Ford, 1988; Ford & Weisbein, 1997), only those concerning training design dealt much with change or intervention. One notable exception has been studies examining the effectiveness of two posttraining interventions (goal setting and relapse prevention training), with all of them finding enhanced transfer (Burke & Baldwin, 1999; Gist et al., 1990; Gist et al., 1991; Tziner, Haccoun, & Kadish, 1991; Werner, O'Leary-Kelly, Baldwin, & Wexley, 1994; Wexley & Baldwin, 1986).

To move to a more action-oriented agenda requires that we begin to understand how transfer-related factors present themselves in organizations. Theory often seems to suggest that the most potent learning transfer systems are those with high levels on all factors. However, as Holton (2000) noted, research has not established whether there is an optimal norm level for components of an organization's learning transfer system. Cultural variations across organizations suggest that not all organizations will or should build the same types of transfer systems. Case evidence supports this. For example, one organization in which we have worked had a very strong team culture that made peer support a more powerful predictor of learning transfer than supervisor support. In a state government agency, the exact opposite was the case.

Such case evidence suggests that a different conception is needed. First, it is possible that a total overall level of transfer system factors is needed—not an absolute level on any one of them. That is, transfer system factors may operate together as a constellation to influence transfer. Some elements might be interchangeable or compensate for missing elements. For example, strong reward systems might compensate for poor peer support or transfer design. Alternatively, a fit perspective might be more appropriate, whereby certain cultures require certain elements of a transfer system to be stronger than in other cultures. This perspective would explain why supervisor support is essential in a bureaucratic structure (such as a government agency), but peer support is less salient. Thus, there would be an optimal level for a given organization with a specific culture.

Holton (2000) goes on to suggest that it is best to search for leverage points for change. It seems likely that the particular factors in an organization's transfer system that are optimal for intervention will vary widely. The leverage point is likely to be a function of the absolute level of a particular factor and its salience in a particular organization's culture. Most organizations would like to see a simple decision rule such as, "If supervisor support is less than 3.0, an intervention is needed." This is too simplistic. A value of 2.5 on the supervisor support scale in the government agency might be a critical leverage point, but the same 2.5 found in a team-based organization might not be a leverage point because the supervisor is less important in that environment.

Unfortunately, there has been no research investigating the most basic question of how learning transfer systems differ across organizational settings in the United States. Previous research has focused mostly on explanation of transfer processes within a specific organization. Before the question of optimal norm levels of transfer factors can be considered, basic questions about differences across organizational settings have to be explored. Identifying differences in transfer systems provides a better understanding of what current transfer systems are like, if current transfer systems are robust in organizations, and what potential transfer factors jeopardize transfer of learning. Understanding transfer system differences across different situations would help organizations become aware of what parts of a transfer system need improvement to enhance transfer of learning. If research shows there are not any differences across organizations or training types, then norms can be considered in a broad sense. If there are significant differences, it would suggest a more customized approach to transfer system change.

This study takes the first step toward the establishment of norms for transfer factors by empirically examining the differences in transfer systems across eight organizations, three organizational types, and nine training types. Although this is a first step, nothing but case evidence is available to describe different organizational transfer systems. A key reason is that until recently, there has not been a validated instrument that could be used to make comparisons across multiple settings. Intuition tells us that each situation is different, but research has not.

Therefore, this study addresses the following research questions:

RESEARCH QUESTION 1: *Are there significant differences in transfer system characteristics between organizational types (profit, nonprofit, and public sector)?*

RESEARCH QUESTION 2: *Are there significant differences in transfer system characteristics between specific organizations?*

RESEARCH QUESTION 3: *Are there significant differences in transfer system characteristics between different training types?*

Method

This section describes the research design, followed by sample and data collection. Measures and data analysis are provided thereafter.

Research Design. This study is a nonexperimental survey research. It is part of an ongoing data collection effort to validate and improve the Learning Transfer System Inventory (LTSI; Holton et al., 2000; Bookter, 1999; Chen, 2003).

Sample and Data Collection. The sample for this analysis was selected from the LTSI response database, which currently has 4,562 responses from fifteen organizations in three countries. All of the U.S. data were collected immediately after training before participants left the training class. Paper-and-pencil-based instruments were distributed to participants. Participation was on a voluntary basis. Individuals were allowed to withdraw from the data collection process, but no training participant elected to do so. Thus, our response rate was 100 percent. Data were keep strictly confidential, with only LTSI researchers able to access it.

Purposive sampling technique was used in this study. When using multivariate analysis of variance (MANOVA) to examine between-group differences, it is important that cell sizes be approximately equal or at least of similar magnitude (Hair, Anderson, Tatham, & Black, 1998). However, Tabachnick and Fidell (1996) pointed out that unequal sample size reflects the nature of the population, and forced equalizing sample size will result in distorting the natural differences of group population and therefore will lose the ability to generalize true findings. Therefore, a decision was made not to force equal group sizes but to select organizations from the available data with a sample size between 40 and 300. Only U.S. organizations were selected because cross-cultural comparisons were beyond the scope of this study.

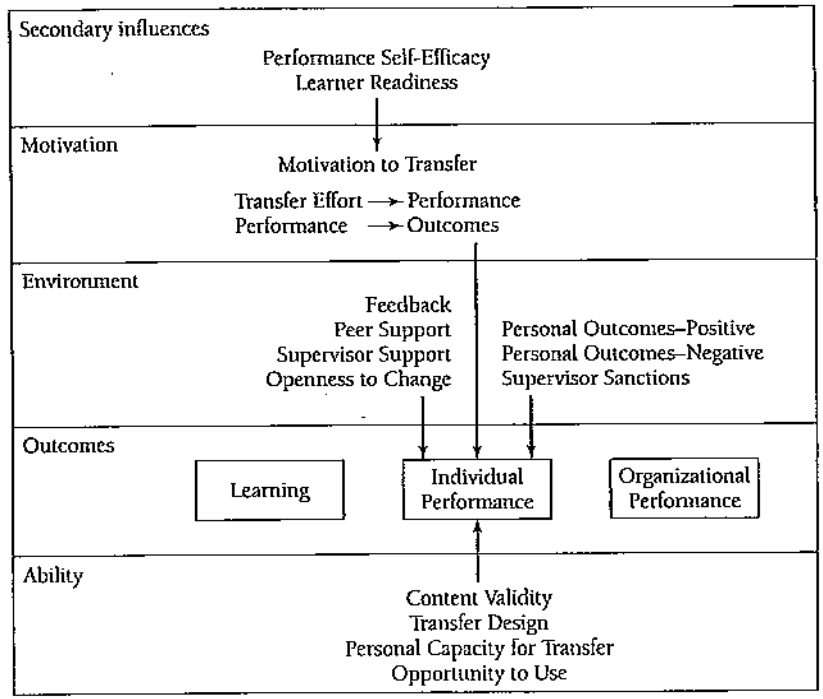
The final selected sample consisted of 1,099 individuals employed by eight different U.S. organizations comprising four private sector organizations (three manufacturing and one services firm), three public sector agencies (one federal and two state government), and one nonprofit organization (only one was available in the data set). For Research Question 3, the training was categorized into different types of training, including supervisory, public management, technical/computer, soft skills (such as interpersonal, coaching, and conflict management training), new employee academy, business professional, competency, leadership, and sales training programs. Training-type information was available for only 617 of the 1,099 respondents in this sample. The decision to select this sample for Research Question 3 resulted from the consideration of similar group sizes and the various training types. Training types with more than two hundred or fewer than thirty-five respondents were not selected in the sample for Research Question 3.

Measures. The LTSI was developed by Holton and Bates (Holton, Bates, & Ruona, 2000). The constructs of the LTSI were established based on a conceptual model (Holton, 1996), and previous research (Holton et al., 1997a, 1997b) construct validated the instrument by common factor analysis. It is one of the most robust transfer system assessment instruments available. A convergent and divergent validity study showed that most of the constructs had only low correlations with other related variables (Bookter, 1999), reinforcing the uniqueness of the transfer system constructs. Some scales have also shown initial evidence of criterion validity in predicting motivation to transfer, learner perceptions of the training utility, and operating procedure use on the job

(Bates, Holton, & Seyler, 2000; Ruona, Leimbach, Holton, & Bates, 2002; Seyler, Holton, Bates, Burnett, & Carvalho, 1998). Two studies examined cross-cultural construct validation of the LTSI in Taiwan (Chen, 2003) and Thailand (Yamnill, 2001). The conceptual framework of the LTSI constructs can be found in Figure 1, which is discussed completely in Holton et al. (2000) and Holton (1996).

The sixteen LTSI constructs provide a comprehensive assessment of factors that influence transfer, including program-specific transfer factors and general transfer factors. It comprises sixty-eight items grouped into sixteen constructs (see Table 1). The sixteen constructs were categorized into four major groups: trainee characteristics, motivation, work environment, and ability (Noe & Schmitt, 1986). Trainee characteristics include learner readiness and performance self-efficacy constructs, while the motivation scales include motivation to transfer, transfer effort and performance expectations, and performance and outcome expectations. The work environment scales include

Figure 1. Learning Transfer System Inventory: Conceptual Model of Instrument Constructs



Source: Holton, Bates, and Ruona (2000, p. 339).

Table 1. LTSI Scale Definitions and Sample Items

Factor	*Definition*	*Sample Item*	*Num Items*	*Alpha*
Training specific scales				
Learner Readiness	Extent to which individuals are prepared to enter and participate in training.	Before the training I had a good understanding of how it would fit my job-related development.	4	.73
Motivation to Transfer	Direction, intensity, and persistence of effort toward utilizing in a work setting skills and knowledge learned.	I get excited when I think about trying to use my new learning on my job.	4	.83
Positive Personal Outcomes	Degree to which applying training on the job leads to outcomes that are positive for the individual.	Employees in this organization receive various "perks" when they utilize newly learned skills on the job.	3	.69
Negative Personal Outcomes	Extent to which individuals believe that *not* applying skills and knowledge learned in training will lead to negative personal outcomes.	If I do not utilize my training I will be cautioned about it.	4	.76
Personal Capacity for Transfer	Extent to which individuals have the time, energy, and mental space in their work lives to make changes required to transfer learning to the job.	My workload allows me time to try the new things I have learned.	4	.68
Peer Support	Extent to which peers reinforce and support use of learning on the job.	My colleagues encourage me to use the skills I have learned in training.	4	.83
Supervisor Support	Extent to which supervisors/ managers support and reinforce use of training on the job.	My supervisor sets goals for me which encourage me to apply my training on the job.	6	.91
Supervisor Sanctions	Extent to which individuals perceive negative responses from supervisors/ managers when applying skills learned in training.	My supervisor opposes the use of the techniques I learned in training.	3	.63
Perceived Content Validity	Extent to which trainees judge training content to accurately reflect job requirements.	What is taught in training closely matches my job requirements.	5	.84
Transfer Design	Degree to which (1) training has been designed and delivered to give trainees the ability to transfer learning to the job, and (2) training instructions match job requirements.	The activities and exercises the trainers used helped me know how to apply my learning on the job.	4	.85
Opportunity to Use	Extent to which trainees are provided with or obtain resources and tasks on the job enabling them to use training on the job.	The resources I need to use what I learned will be available to me after training.	4	.70
General scales				
Transfer Effort—Performance Expectations	Expectation that effort devoted to transferring learning will lead to changes in job performance.	My job performance improves when I use new things that I have learned.	4	.81
Performance—Outcomes Expectations	Expectation that changes in job performance will lead to valued outcomes.	When I do things to improve my performance, good things happen to me.	5	.83
Resistance-Openness to Change	Extent to which prevailing group norms are perceived by individuals to resist or discourage the use of skills and knowledge acquired in training.	People in my group are open to changing the way they do things.	6	.85
Performance Self-Efficacy	An individual's general belief that they are able to change their performance when they want to.	I am confident in my ability to use newly learned skills on the job.	4	.76
Performance Coaching	Formal and informal indicators from an organization about an individual's job performance.	After training, I get feedback from people about how well I am applying what I learned..	4	.70

performance coaching, supervisor support, supervisor sanctions, peer support, resistance-openness to change, positive personal outcomes, and negative personal outcomes. Opportunity to use personal capacity for transfer, perceived content validity, and transfer design comprise the factors of the ability scales. All of the items use a five-point Likert-type scales from 1 = strongly disagree to 5 = strongly agree.

Data Analysis. MANOVA was used to answer all three research questions because the research questions involved multiple dependent variables (Tabachnick & Fidell, 1996; Hair et al., 1998). The sixteen constructs of the LTSI were used as the dependent variables. According to Tabachnick & Fidell (1996), when research questions involve multiple dependent variables, if each dependent variable is tested individually, a severe inflation of type I error can occur. In MANOVA, correlated dependent variables are considered simultaneously, eliminating the experimentwise error rate problem.

Post hoc comparisons with univariate analysis of variance were then used to explore the findings in more detail. A Bonferroni adjustment was used because it is most appropriate for multiple analyses when overall type I error is taken into account (Keselman et al., 1998). Prior to these analyses, the data were examined for adherence to MANOVA assumptions, and outliers were also investigated. No significant violations of assumptions or influential outliers were discovered. SPSS statistical software was adopted to conduct the statistical analysis.

Results

This section reports separate results for each research question.

Research Question 1. Research Question 1 asked if significant differences existed in transfer systems across organizational types. Organizations were categorized into three types: public, private, and nonprofit organizations (see Table 2). Public, private, and nonprofit organizations included 475 (43.2 percent), 432 (39.3 percent), and 192 (17.5 percent) respondents, respectively. The ratio of the largest group to smallest group was 2.52.

MANOVA analysis showed statistically significant differences (Wilks's lambda = .718, F = 11.632) on all criteria, indicating that transfer system characteristics differed across organizational types. Univariate ANOVA tests showed that all of the scales were significantly different across organizational types, with the exception of two scales: learner readiness and performance self-efficacy (see Table 2).

Post hoc comparisons were then examined for differences among pairs of organizational types. When comparing public and private organizations, only six of twenty-six paired comparisons showed significant differences. The results showed that Performance–Outcomes Expectations (M = 3.40 versus 3.15), Opportunity to Use (M = 3.68 versus 3.49), and Personal Capacity for Transfer (M = 3.28 versus 3.15) scales in private organizations were significantly

Table 2. Univariate Comparisons by Organizational Types

	Organizational Type Means					
	Overall	*Public*	*Private*	*Nonprofit*	*F*	*P*
Training specific						
Learner Readiness	3.17	3.13	3.16	3.28	2.39	0.092
Motivation to Transfer	3.97	3.94	3.92	4.18	11.48	<.001
Positive Personal Outcomes	2.47	2.34	2.39	2.95	44.59	<.001
Negative Personal Outcomes	2.48	2.62	2.21	2.75	49.68	<.001
Personal Capacity for Transfer	3.20	3.15	3.28	3.14	4.33	0.013
Peer Support	3.41	3.40	3.35	3.59	8.44	<.001
Supervisor Support	3.00	2.98	2.84	3.40	25.00	<.001
Supervisor Sanctions	2.50	2.75	2.31	2.32	41.10	<.001
Perceived Content Validity	3.48	3.51	3.40	3.61	5.89	0.003
Transfer Design	3.99	3.93	3.97	4.19	10.83	<.001
Opportunity to Use	3.57	3.49	3.68	3.51	9.35	<.001
Training in general						
Transfer Effort—Performance Expectations	3.96	3.93	3.95	4.08	5.49	0.004
Performance—Outcomes Expectations	3.32	3.15	3.40	3.54	21.45	<.001
Resistance-Openness to Change	2.69	2.83	2.59	2.56	14.91	<.001
Performance Self-Efficacy	3.76	3.75	3.75	3.84	1.60	0.202
Performance Coaching	3.08	3.04	3.05	3.25	6.04	0.002

higher than those in public organizations. However, the Supervisor Sanctions (M = 2.75 versus 2.31), Resistance to Change (M = 2.83 versus 2.59), and Personal Outcomes Negative (M = 2.62 versus 2.21) scales in public organizations were significantly higher than those in private organizations.

Using the four major categories of transfer system factors discussed earlier, no significant differences were found on trainee characteristics scales in any paired comparisons. On the motivation scales, two of three scales, the Motivation to Transfer and Transfer Effort—Performance Expectations, revealed that the nonprofit organization was significantly different from public and private organizations. For the Motivation to Transfer scale, the nonprofit organization was significantly higher than public and private organizations (M = 4.18 versus 3.94 and 3.92, respectively) while on the Transfer Effort—Performance Expectations Scale, the nonprofit organization was significantly greater than the public and private organizations (M = 4.08 versus 3.93 and 3.95, respectively). This may imply that employees in nonprofit organizations are more motivated to transfer their learned skills to the job as well as expect that their transfer effort will lead to changes in job performance than employees in public and private organizations.

Within the seven environment scales, the results showed that the nonprofit organization was significantly higher than public and private organizations on four environment-associated scales: Performance Coaching (M = 3.25 versus 3.04 and 3.05, respectively), Supervisor Support (M = 3.40 versus 2.98 and 2.84, respectively), Peer Support (M = 3.59 versus 3.40 and 3.34, respectively), and Personal Positive Outcomes (M = 2.95 versus 2.34 and 2.39, respectively). The results also revealed that the Supervisor Sanctions (M = 2.75 versus 2.31 and 2.32, respectively) and Resistance to Change (M = 2.83 versus 2.59 and 2.56, respectively) scales in public organizations were significantly higher than private and nonprofit organizations. On the ability scales, the results showed that employees in private organizations had significantly higher opportunity to use learning than employees in public and nonprofit organizations (M = 3.68 versus 3.49 and 3.51, respectively).

Overall, the results revealed that the employees in the nonprofit organization had higher motivation to transfer than those in public and private organizations. Public organizations had significantly higher resistance to new learning, and private organizations had significantly greater opportunity to apply learning.

Research Question 2. Research Question 2 sought to determine if significant differences existed in transfer systems across the specific organizations in the sample. Eight organizations were examined in the analysis (Table 3).

The largest group contained 211 respondents and the smallest group 66 respondents, for a ratio of 3.20. MANOVA analysis revealed significant differences (Wilks's lambda = .341, F = 10.787) across organizations, indicating that the transfer systems were significantly different across the selected organizations. In the between-subject ANOVA, all of the transfer scales were significantly different across the selected organizations (see Table 4).

Table 3. Sample Description for Research Question 2

Organizations	*Frequency*	*Percentage*
Organization 1: State agency	175	15.9
Organization 2: State agency	89	8.1
Organization 3: Federal agency	211	19.2
Organization 4: Manufacturer	118	10.7
Organization 5: Manufacturer	66	6.0
Organization 6: Insurance company	106	9.6
Organization 7: Manufacturer	142	12.9
Organization 8: Nonprofit	192	17.5
Total	1,099	100.00

The post hoc comparisons for Research Question 2 revealed that respondents in organization 2 rated supervisor sanctions significantly higher than any other organization in this study (M = 2.83 versus 2.43, 2.54, 2.28, 2.52, 2.16, 2.37, and 2.32, respectively). This implies that the supervisors in that organization probably need to decrease their opposition to training order to enhance transfer of learning.

Organization 8 appeared to have a substantially different transfer system from the other organizations. In organization 8, the performance coaching scale was significantly higher than that of organizations 3 and 4 (M = 3.25 versus 2.96 and 2.96, respectively). The Supervisor Support scale was significantly higher than that of organizations 1, 3, 4, 6, and 7 (M = 3.40 versus 2.96, 2.84, 2.79, 2.88, and 2.74, respectively). The Peer Support scale of organization 8 was significantly higher than that of organizations 2, 6, and 7 (M = 3.59, versus 3.22, 3.30, and 3.30, respectively). The Personal Positive Outcomes scale of this organization was significantly higher than that of organizations 1, 3, 4, 5, 6, and 7 (M = 2.95 versus 2.13, 2.39, 2.34, 2.46, 2.40, and 2.38, respectively), and the Personal Negative Outcomes scale was significantly higher than organizations 1, 4, 5, 6, and 7 (M = 2.75 versus 2.09, 2.15, 2.38, 2.05, and 2.29, respectively). In summary, five of seven work environment–associated scales in organization 8 were significantly higher than at least two other organizations. This may imply that the work environment in this organization was generally better than other organizations in this study. This result is also consistent with other researchers' suggestions that each organization has its own positive and negative transfer factors that may either promote or prohibit learning and transfer (Mathieu, Tannenbaum, & Salas, 1992; Holton, Bates, & Ruona, 2000).

Research Question 3. Research Question 3 sought to determine if significant differences existed in transfer systems across training types. Nine training types were included in this analysis, as shown in Table 5.

The largest group was 118 (19.1 percent) respondents, the smallest group was 38 (6.2 percent) respondents, and the ratio of these two extreme groups was 3.11. MANOVA analysis indicated that the transfer systems are significantly different (Wilks's lambda = .296, F = 5.909) across training types. In the

Table 4. Univariate Comparisons by Organization

	Organizations									
	Overall	*Number 1*	*Number 2*	*Number 3*	*Number 4*	*Number 5*	*Number 6*	*Number 7*	*Number 8*	*F*	*P*
Training specific											
Learner Readiness	3.17	2.90	3.10	3.33	2.99	2.90	3.33	3.31	3.28	8.37	<.001
Motivation to Transfer	3.97	3.98	3.74	3.99	4.06	4.10	3.95	3.68	4.18	8.99	<.001
Positive Personal Outcomes	2.47	2.13	2.66	2.39	2.34	2.46	2.40	2.38	2.95	17.41	<.001
Negative Personal Outcomes	2.48	2.09	2.94	2.92	2.15	2.38	2.05	2.29	2.75	40.98	<.001
Personal Capacity for Transfer	3.20	3.39	3.07	2.99	3.20	3.50	3.29	3.24	3.14	7.04	<.001
Peer Support	3.41	3.44	3.22	3.44	3.36	3.48	3.30	3.30	3.59	3.94	<.001
Supervisor Support	3.00	2.96	3.35	2.84	2.79	3.08	2.88	2.74	3.40	11.33	<.001
Supervisor Sanctions	2.50	2.43	3.83	2.54	2.28	2.52	2.16	2.37	2.32	56.29	<.001
Perceived Content Validity	3.48	3.40	3.43	3.64	3.38	3.57	3.36	3.37	3.61	4.05	<.001
Transfer Design	3.99	3.97	3.55	4.06	4.00	4.04	4.06	3.86	4.19	10.44	<.001
Opportunity to Use Learning	3.57	3.61	3.01	3.59	3.66	3.87	3.78	3.52	3.51	13.30	<.001
Training in general											
Transfer Effort—Performance Expectations	3.96	4.09	3.74	3.88	3.97	4.12	3.94	3.85	4.08	7.17	<.001
Performance—Outcomes Expectations	3.32	3.30	2.89	3.15	3.42	3.60	3.44	3.27	3.54	10.02	<.001
Resistance—Openness to Change	2.69	2.79	3.04	2.77	2.64	2.67	2.40	2.68	2.56	7.20	<.001
Performance Self-Efficacy	3.76	3.83	3.55	3.77	3.67	3.75	3.91	3.68	3.84	3.84	<.001
Performance Coaching	3.08	3.13	3.04	2.96	2.96	3.21	3.06	3.05	3.25	3.15	0.003

Table 5. Sample Description for Research Question 3

Training Type	*Frequency*	*Percentage*
Training 1: Supervisory	67	10.9
Training 2: Public management	110	17.8
Training 3: Computer skills	38	6.2
Training 4: Soft skills[a]	44	7.1
Training 5: New employee academy	89	14.4
Training 6: Business professional skills[b]	50	8.1
Training 7: Job competency training[c]	59	9.6
Training 8: Leadership	42	6.8
Training 9: Sales	118	19.1
Total	617	100.00

[a]Soft skill training: interpersonal, coaching, and conflict management training.

[b]Business professional skills: training in general professional skills other than soft skills (for example, time management, planning).

[c]Job competency training: training designed to develop job-specific competencies not included in other categories.

between-subject ANOVA, all of the scales were significantly different across training types, except for two scales: perceived content validity and performance coaching (see Table 6).

Post hoc tests showed that no significant differences were found on performance coaching, peer support, and perceived content validity scales in the paired comparisons. Respondents who received new employee academy training rated Negative Personal Outcomes ($M = 2.94$ versus 2.34, 2.05, 2.04, 1.88, 2.11, 2.50, 2.21, and 2.15, respectively) and Supervisor Sanctions scales ($M = 3.83$ versus 2.30, 2.46, 2.24, 2.37, 2.43, 2.46, 2.56, and 2.28, respectively) significantly higher than those who received any other training types. However, the opportunity to use scales was rated significantly lower than any other training types ($M = 3.01$ versus 3.85, 3.64, 3.60, 3.62, 3.47, 3.48, 3.87, and 3.66, respectively). In addition, respondents in the same training program rated Positive Personal Outcomes significantly higher than public management, technical/computer, and soft skill training ($M = 2.66$ versus 2.08, 2.09, and 2.14, respectively).

Respondents who received competency training rated the Motivation to Transfer scale significantly lower than supervisory, public management, leadership, and sales training programs ($M = 3.54$ versus 4.06, 3.91, 4.03, and 4.06, respectively). Performance-outcomes expectations for supervisory training were significantly higher than public management, technical/computer, soft skills, new employee academy, and competency training programs ($M = 3.69$ versus 3.25, 3.03, 3.16, 2.89, and 3.18, respectively). Respondents who received leadership training rated the Performance—Outcomes Expectations ($M = 3.39$ versus 2.89), Opportunity to Use ($M = 3.87$ versus 3.01), and Transfer Design ($M = 4.01$ versus 3.55) significantly higher than those who received the new employee academy training, while the leadership training

Table 6. Univariate Comparisons by Training Types

	Training Types										
	Overall	Number 1	Number 2	Number 3	Number 4	Number 5	Number 6	Number 7	Number 8	Number 9	F	p
Training specific												
Learner Readiness	3.08	2.92	2.88	3.45	3.38	3.10	3.20	3.30	3.01	2.99	3.80	<.001
Motivation to Transfer	3.90	4.06	3.91	3.93	3.94	3.74	3.86	3.54	4.03	4.06	4.14	<.001
Positive Personal Outcomes	2.34	2.50	2.08	2.09	2.14	2.66	2.53	2.36	2.25	2.34	4.99	<.001
Negative Personal Outcomes	2.28	2.34	2.05	2.04	1.88	2.94	2.11	2.50	2.21	2.15	17.97	<.001
Personal Capacity for Transfer	3.28	3.51	3.45	3.22	3.16	3.07	3.12	3.31	3.45	3.20	4.06	<.001
Peer Support	3.36	3.57	3.43	3.60	3.21	3.22	3.30	3.25	3.29	3.36	2.44	0.013
Supervisor Support	2.94	3.24	2.94	3.00	2.65	3.35	2.87	2.50	2.93	2.79	5.69	<.001
Supervisor Sanctions	2.59	2.30	2.46	2.24	2.37	3.83	2.43	2.46	2.56	2.28	42.76	<.001
Perceived Content Validity	3.42	3.54	3.35	3.47	3.39	3.43	3.38	3.43	3.44	3.38	0.46	0.884
Transfer Design	3.89	4.11	3.92	3.78	3.89	3.55	3.87	3.93	4.01	4.00	4.67	<.001
Opportunity to Use	3.56	3.85	3.64	3.60	3.62	3.01	3.47	3.48	3.87	3.66	12.21	<.001
Training in general												
Transfer Effort—Performance Expectations	3.94	4.08	4.08	3.97	3.80	3.74	3.88	3.85	4.07	3.97	3.83	<.001
Performance—Outcomes Expectations	3.28	3.69	3.25	3.03	3.16	2.89	3.45	3.18	3.39	3.42	6.86	<.001
Resistance—Openness to Change	2.71	2.56	2.74	2.46	2.45	3.04	2.73	2.78	2.75	2.64	4.43	<.001
Performance Self-Efficacy	3.72	3.88	3.80	3.66	3.86	3.55	3.70	3.69	3.71	3.67	2.28	0.020
Performance Coaching	3.06	3.26	3.09	3.11	2.96	3.04	3.03	3.09	3.02	2.96	1.14	0.336

respondents perceived Supervisor Sanctions ($M = 2.56$ versus 3.83) and Negative Personal Outcomes ($M = 2.21$ versus 2.94) significantly lower than those who received the new employee academy training.

Respondents who received sales training rated Motivation to Transfer ($M = 4.06$ versus 3.74), Performance—Outcomes Expectations ($M = 3.42$ versus 2.89), Opportunity to Use ($M = 3.66$ versus 3.01), and transfer design scales ($M = 4.00$ versus 3.55) significantly higher than those who received new employee academy training. Sales training respondents rated Supervisor Sanctions ($M = 2.28$ versus 3.83), Resistance-Openness to Change ($M = 2.64$ versus 3.04), and Negative Personal Outcomes ($M = 2.15$ versus 2.94) significantly lower than those who received new employee academy training.

Detailed post hoc comparisons categorized by the four sets of scales for the three research questions can be found in Table 7.

Implications for HRD

This study documents for the first time that transfer systems are significantly different across organizational types, organizations, and training types. Although this might be intuitively obvious to those who work in organizations, no previous research had documented and compared transfer system factors as was done here. The results from Research Question 2 confirm the highly variable nature of transfer system factors across different organizations. It is also distressing to note the overall low levels reported on most transfer system factors. For the most part, employees reported what appear to be significant weaknesses in their organization's transfer system, as evidenced by the number of mean responses hovering around 3.0.

For data accessibility reasons, random selection drawn from a population of training attendants in the United States could not be done in this study. Normally, the use of a purposive sample such as was used here would raise concerns about the generalizability of the findings. However, this study does not suggest that there is a normative level, as indicated by the means in the sample. Our focus here is not on mean or aggregate levels on these factors, but rather on the variance in transfer systems across organizations. No attempt is made to generalize outside the boundaries of this data. In fact, our conclusion is that general guidelines about transfer systems may not be able to be derived. If we had a representative sample, then a mean could be calculated, which would have seductively reassuring generalizability. Yet these findings suggest it would be misleading. The variance demonstrated in these data across organizational type, organizations, and training types suggests that each situation will present a unique constellation of factor—some strong and some weaker. Interventions will have to be tailored to the specific situation. Thus, the only principle being generalized from this study is that there is no generalization; each situation has to be examined individually. This is entirely consistent with other types of organizational culture and climate change.

Table 7. Results of Post Hoc Comparisons for Organizational Type, Organization, and Training Type

	Organizational Type		*Organization*		*Training Type*	
	Number(Mean)	*Number(Mean)*	*Number(Mean)*	*Number(Mean)*	*Number(Mean)*	*Number(Mean)*
Trainee characteristics scales						
Learner Readiness	None		3(3.33)	1(2.90)***	3(3.45)	2(2.88)**
			3(3.33)	4(2.99)**	4(3.38)	2(2.88)*
			3(3.33)	5(2.90)**		
			6(3.33)	1(2.90)***		
			6(3.33)	4(2.99)*		
			6(3.33)	5(2.90)**		
			7(3.31)	1(2.90)***		
			7(3.31)	4(2.99)*		
			7(3.31)	5(2.90)**		
			8(3.28)	1(2.90)***		
			8(3.28)	4(2.99)**		
			8(3.28)	5(2.90)*		
Performance Self-Efficacy	None		1(3.83)	2(3.55)*	1(3.88)	5(3.55)*
			6(3.91)	2(3.55)***		
			8(3.84)	2(3.55)**		
Motivation scales						
Motivation to Transfer	1(3.94)	3(4.18)***	1(3.98)	7(3.68)**	1(4.06)	7(3.54)***
	2(3.92)	3(4.18)***	3(3.99)	7(3.68)***	2(3.91)	7(3.54)*
			4(4.06)	2(3.74)*	8(4.03)	7(3.54)*
			4(4.06)	7(3.68)***	9(4.06)	5(3.74)*
			5(4.10)	2(3.74)*	9(4.06)	7(3.54)***
			5(4.10)	7(3.68)*		
			6(3.95)	7(3.68)*		
			8(4.18)	2(3.74)***		
			8(4.18)	7(3.68)***		
Transfer Effort–Performance Expectations	1(3.93)	3(4.08)**	1(4.09)	2(3.74)***	1(4.08)	5(3.74)**
	2(3.95)	3(4.08)*	1(4.09)	3(3.88)**	2(4.08)	5(3.74)***
			1(4.09)	7(3.85)**		
			5(4.12)	2(3.74)***		
			5(4.12)	3(3.88)*		
			5(4.12)	7(3.85)*		
			8(4.08)	2(3.74)***		
			8(4.08)	3(3.88)**		
			8(4.08)	7(3.85)**		
Performance—Outcomes Expectations	1(3.15)	2(3.40)***	1(3.30)	2(2.89)***	1(3.69)	2(3.25)**
	1(3.15)	3(3.54)***	4(3.42)	2(2.89)***	1(3.69)	3(3.03)***
			5(3.60)	2(2.89)***	1(3.69)	4(3.16)*
			5(3.60)	3(3.15)***	1(3.69)	5(2.89)***
			6(3.44)	2(2.89)***	1(3.69)	7(3.18)**
			6(3.44)	3(3.15)*	2(3.25)	5(2.89)*
			7(3.27)	2(2.89)**	6(3.45)	5(2.89)**
			8(3.54)	2(2.89)***	8(3.39)	5(2.89)*
			8(3.54)	3(3.15)***	9(3.42)	5(2.89)***
			8(3.54)	7(3.27)*		
Work environment scales						
Performance Coaching	1(3.04)	3(3.25)**	8(3.25)	3(2.96)**	None	
	2(3.05)	3(3.25)**	8(3.25)	4(2.96)*		
Supervisor Support	1(2.98)	3(3.40)***	2(3.35)	1(2.96)*	1(3.24)	4(2.65)*
	2(2.84)	3(3.40)***	2(3.35)	3(2.84)***	1(3.24)	7(2.50)***
			2(3.35)	4(2.79)***	5(3.35)	4(2.65)***
			2(3.35)	6(2.88)**	5(3.35)	7(2.50)***
			2(3.35)	7(2.74)***	5(3.35)	9(2.79)***
			8(3.40)	1(2.96)***		
			8(3.40)	3(2.84)***		
			8(3.40)	4(2.79)***		
			8(3.40)	6(2.88)***		
			8(3.40)	7(2.74)***		

(*Continued*)

Table 7. Results of Post Hoc Comparisons for Organizational Type, Organization, and Training Type (Continued)

	Organizational Type		*Organization*		*Training Type*	
	Number (Mean)	*Number (Mean)*	*Number (Mean)*	*Number (Mean)*	*Number (Mean)*	*Number (Mean)*
Supervisor Sanctions	1(2.75)	2(2.31)***	1(2.43)	6(2.16)*	5(3.83)	1(2.30)**
	1(2.75)	3(2.32)***	2(3.83)	1(2.43)***	5(3.83)	2(2.46)***
			2(3.83)	3(2.54)***	5(3.83)	3(2.24)***
			2(3.83)	4(2.28)***	5(3.83)	4(2.37)***
			2(3.83)	5(2.52)***	5(3.83)	6(2.43)***
			2(3.83)	6(2.16)***	5(3.83)	7(2.46)***
			2(3.83)	7(2.37)***	5(3.83)	8(2.56)***
			2(3.83)	8(2.32)***	5(3.83)	9(2.28)***
			3(2.54)	4(2.28)*		
			3(2.54)	6(2.16)***		
			3(2.54)	8(2.32)*		
			5(2.52)	6(2.16)*		
Peer Support	1(3.40)	3(3.59)**	8(3.59)	2(3.22)***	None	
	2(3.35)	3(3.59)***	8(3.59)	6(3.30)*		
			8(3.59)	7(3.30)**		
Resistance-Openness to Change	1(2.83)	2(2.59)***	1(2.79)	6(2.40)***	5(3.04)	1(2.56)***
	1(2.83)	3(2.56)***	2(3.04)	4(2.64)**	5(3.04)	3(2.46)***
			2(3.04)	5(2.67)*	5(3.04)	4(2.45)***
			2(3.04)	6(2.40)***	5(3.04)	9(2.64)**
			2(3.04)	7(2.68)**		
			2(3.04)	8(2.56)***		
			3(2.77)	6(2.40)***		
Positive Personal Outcomes	1(2.34)	3(2.95)***	2(2.66)	1(2.13)***	1(2.50)	2(2.08)*
	2(2.39)	3(2.95)***	3(2.39)	1(2.13)*	5(2.66)	2(2.08)***
			8(2.95)	1(2.13)***	5(2.66)	3(2.09)**
			8(2.95)	3(2.39)***	5(2.66)	4(2.14)**
			8(2.95)	4(2.34)***	6(2.53)	2(2.08)*
			8(2.95)	5(2.46)***		
			8(2.95)	6(2.40)***		
			8(2.95)	7(2.38)***		
Negative Personal Outcomes	1(2.62)	2(2.21)***	2(2.94)	1(2.09)***	1(2.34)	4(1.88)**
	2(2.21)	3(2.75)***	2(2.94)	4(2.15)***	5(2.94)	1(2.34)***
			2(2.94)	5(2.38)***	5(2.94)	2(2.05)***
			2(2.94)	6(2.05)***	5(2.94)	3(2.04)***
			2(2.94)	7(2.29)***	5(2.94)	4(1.88)***
			3(2.92)	1(2.09)***	5(2.94)	6(2.11)***
			3(2.92)	4(2.15)***	5(2.94)	7(2.50)**
			3(2.92)	5(2.38)***	5(2.94)	8(2.21)***
			3(2.92)	6(2.05)***	5(2.94)	9(2.15)***
			3(2.92)	7(2.29)***	7(2.50)	2(2.05)***
			8(2.75)	1(2.09)***	7(2.50)	3(2.04)*
			8(2.75)	4(2.15)***	7(2.50)	4(1.88)***
			8(2.75)	5(2.38)**	7(2.50)	9(2.15)*
			8(2.75)	6(2.05)***		
			8(2.75)	7(2.29)***		
Ability scales						
Opportunity to Use	1(3.49)	2(3.68)***	1(3.61)	2(3.01)***	1(3.85)	5(3.01)***
	2(3.68)	3(3.51)*	3(3.59)	2(3.01)***	2(3.64)	5(3.01)***
			4(3.66)	2(3.01)***	3(3.60)	5(3.01)***
			5(3.87)	2(3.01)***	4(3.62)	5(3.01)***
			5(3.87)	7(3.52)*	6(3.47)	5(3.01)**
			5(3.87)	8(3.51)**	7(3.48)	5(3.01)***
			6(3.78)	2(3.01)***	8(3.87)	5(3.01)***
			6(3.78)	8(3.51)*	9(3.66)	5(3.01)***
			7(3.52)	2(3.01)***		
			8(3.51)	2(3.01)***		

(Continued)

Table 7. Results of Post Hoc Comparisons for Organizational Type, Organization, and Training Type

	Organizational Type		*Organization*		*Training Type*	
	Number (Mean)	*Number(Mean)*	*Number(Mean)*	*Number(Mean)*	*Number(Mean)*	*Number(Mean)*
Personal Capacity for Transfer	1(3.15)	2(3.28)*	1(3.39)	2(3.07)*	1(3.51)	5(3.07)**
			1(3.39)	3(2.99)***	2(3.45)	5(3.07)**
			1(3.39)	8(3.14)*		
			5(3.50)	2(3.07)**		
			5(3.50)	3(2.99)***		
			5(3.50)	8(3.14)*		
			6(3.29)	3(2.99)**		
			7(3.24)	3(2.99)*		
Perceived Content Validity	2(3.40)	3(3.61)**	3(3.64)	1(3.40)*	None	
			3(3.64)	6(3.36)*		
			3(3.64)	7(3.37)*		
Transfer Design	1(3.93)	3(4.19)***	1(3.97)	2(3.55)***	1(4.11)	5(3.55)***
	2(3.97)	3(4.19)***	3(4.06)	2(3.55)***	2(3.92)	5(3.55)***
			4(4.00)	2(3.55)***	7(3.93)	5(3.55)**
			5(4.04)	2(3.55)***	8(4.01)	5(3.55)**
			6(4.06)	2(3.55)***	9(4.00)	5(3.55)***
			7(3.86)	2(3.55)**		
			8(4.19)	1(3.97)*		
			8(4.19)	2(3.55)***		
			8(4.19)	7(3.86)***		

*.05 significance level. **.01 significance level. ***.001 significance level.

Note: "3(3.33) 1(2.90)***" means that the Learner Readiness scale is different at significant level .001 between organization 3 and organization 1. The mean values are 3.33 and 2.90, respectively.

Only significant paired comparisons are listed in this table.

Number representation for organizational type: 1 = public sector, 2 = private sector, 3 = nonprofit organization.

Number representation for training type: 1 = supervisory, 2 = public management, 3 = technical/computer, 4 = soft skill, 5 = new employee academy, 6 = business professional, 7 = competency, 8 = leadership, 9 = sales.

Research Question 1, which examined differences by organizational type, showed that all but two scales (Learner Readiness and Performance Self-Efficacy) were significantly different across types of organizations. Results from private sector organizations showed that employees perceive that changing their performance is more likely to lead to valued outcomes, that they have more opportunity to use their learning, and that they have more capacity for trying new learning. Employees in public sector organizations perceive that their supervisor is more likely to oppose their use of new methods learned in training, that they are more likely to encounter resistance to change, and that they are more likely to have negative personal outcomes if they do not apply their training. The nonprofit organization in this study appeared to have a particularly strong transfer system with higher motivation to transfer and more supervisor support.

Results from Research Question 3 were also quite interesting. First, there were no differences in perceptions of perceived content validity across the training types. However, all training was rated with only moderate content validity (the mean score was approximately 3.4). This suggests that all training examined in this study suffered from a disconnect between the job and training content.

Supervisor support was also rated low across all training types, confirming the widely held belief that supervisors do not generally support training as they should. The two personal outcomes scales were also low, confirming that organizations generally have not adequately linked training to performance outcomes. The results indicate that perceptions of transfer system factors vary depending on the type training. This supports the notion that organizational systems' support for transfer varies depending on the type of training.

These results also point to the importance of using a diagnostic instrument such as the LTSI in planning HRD interventions. Transfer systems are not uniform and stable but rather vary depending on the type of organization, the culture of the organization, and the type of training. Human resource professionals in organizations need to diagnose their transfer systems strategically and identify the key factor or factors that will have an influential effect on trainees' transfer of learning. A transfer system survey, such as the LTSI, can be used as a diagnostic tool prior to training and as an evaluation tool after training to examine transfer systems within organizations.

Earlier, we introduced Holton's notion of leverage points for change in learning transfer systems (Holton & Baldwin, 2003). This study suggests that the leverage point conception may have some merit. The LTSI results suggest that different interventions might emerge for each of the organizations included in this study because each has a different leverage point for change. Furthermore, these results suggest that different interventions might be needed for different training types within a single organization. Of course, actual transfer outcomes data would be necessary to confirm this hypothesis, but it appears to have promise.

It should also be noted that many of the differences between groups were somewhat small. They were statistically significant because of the high power due to large cell sizes. Because this instrument has not been heavily used in predictive studies, the effect of these differences on performance outcomes is unknown.

Overall, this study is the first to provide descriptive and comparative data about organizational transfer systems. If learning transfer research and practice is to become more action oriented, as we advocate, it is important that additional research of this type be conducted to understand the state of the practice better and the gaps that need to be closed. One of the key benefits of using a standard validated instrument such as the LTSI is that we can begin to make comparisons across organizations, as was done here. Prior to the development of this instrument, such comparisons were not possible because each study tended to use its own unique measures. As work continues with the instrument, new insights on the dynamics of organizational transfer systems are expected to emerge.

Directions for Future Research

Clearly, the purposive sampling used in this study creates limitations on the generalizability of the findings. Future research should examine transfer systems in other settings that were not included in this study. For instance, there was only one nonprofit organization available in the LTSI response data set and used in this study. The generalizability of the observation that transfer systems in nonprofit organizations seem more robust than the private and public sectors needs further examination.

Much of the transfer research has focused on how individual differences such as self-efficacy influence transfer effects (Gist et al., 1990, 1991). This study points out that participant perceptions of transfer systems differ due to situational variables (for example, organizational culture, organizational type, and training type). Future research may extend the scope of this type of research to examine the relationships between situational variables and individual differences and their combined effect of transfer systems. In particular, no study in the United States has examined the combined effects of situational and individual difference variables.

Finally, this research points to the value of having a standardized validated instrument. In previous research, most researchers have created custom scales, which makes cross-study comparisons problematic. If HRD researchers are to be able to study phenomena across multiple organizational settings, it is imperative that more attention be given to developing and using instruments that are well validated and designed for use in multiple settings. It is only by having generally accepted measures (such as the LTSI) that comparisons across organizations and cultures will really be possible.

References

Baldwin, T. T., & Ford, K. J. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology, 41,* 63–105.

Bates, R. A., Holton, E. F. III, & Seyler, D. L. (2000). The role of interpersonal factors in the application of computer-based training in an industrial setting. *Human Resource Development International, 3,* 19–42.

Bookter, A. (1999). *Convergent and divergent validity study of the Learning Transfer Questionnaire.* Unpublished doctoral dissertation. Louisiana State University.

Burke, L., & Baldwin, T. T. (1999). Effects of relapse prevention training and transfer climate on the use of trained skills. *Human Resource Management, 38,* 229–242.

Chen, H.-C. (2003). *Cross-cultural construct validation of the learning transfer system inventory in Taiwan.* Unpublished doctoral dissertation, Louisiana State University.

Ford, J. K., & Weissbein, D. A. (1997). Transfer of training: An update review and analysis. *Performance Improvement Quarterly, 10,* 22–41.

Gist, M. E., Bavetta, A. G., & Stevens, C. K. (1990). Transfer training method: Its influence on skill generalization, skill repetition, and performance level. *Personnel Psychology, 43,* 501–523.

Gist, M. E., Stevens, C. K., & Bavetta, A. G. (1991). Effects of self-efficacy and post-training intervention on the acquisition and maintenance of complex interpersonal skills. *Personnel Psychology, 44,* 837–861.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Upper Saddle River, NJ: Prentice Hall.

Holton, E. F. III. (1996). The flawed four level evaluation model. *Human Resource Development Quarterly, 7,* 5–21.

Holton, E. F. III. (2000). What's *really* wrong: Diagnosis for learning transfer system change. *Advances in Developing Human Resources, 2* (4), 7–22.

Holton, E. F. III, & Baldwin, T. T. (2000). Making transfer happen: An action perspective on learning transfer systems. *Advances in Developing Human Resources, 2* (4), 1–6.

Holton, E. F. III, & Baldwin, T. T. (2003). Improving learning transfer in organizations. San Francisco: Jossey-Bass.

Holton, E. F. III, Bates, R. A., and Ruona, W.E.A. (2000). Development and construct validation of a generalized learning transfer system inventory. *Human Resource Development Quarterly, 11,* 333–360.

Holton, E. F. III, Bates, R., Seyler, D., & Carvalho, M. (1997a). Toward construct validation of a transfer climate instrument. *Human Resource Development Quarterly, 8,* 95–113.

Holton, E. F. III, Bates, R., Seyler, D., & Carvalho, M. (1997b). Final word: Reply to Newstrom and Tang's reactions. *Human Resource Development Quarterly, 8,* 145–149.

Keselman, H. J., Huberty, C. J., Six, L. M., Olejnik, S., Cribbie, R. A., Donahue, B., Kowalchuk, R. K., Lowman, L. L., Petoskey, M. D., & Keselman, J. C. (1998). Statistical practices of educational researchers: An analysis of their ANOVA, MANOVA, and ANCOVA analyses. *Review of Educational Research, 68* (3), 350–386.

Kraiger, K., Salas, E., & Cannon-Bowers, J. A. (1995). Measuring knowledge organization as a method for assessing learning during training. *Human Factors, 37,* 804–816.

Mathieu, J. E., Tannenbaum, S. I., & Salas, E. (1992). Influence of individual and situational characteristics on measures of training effectiveness. *Academy of Management Journal, 35,* 882–847.

Noe, R. A., & Schmitt, N. (1986). The influence of trainee attitudes on training effectiveness: Test of a model. *Personnel Psychology, 39,* 497–523.

Paas, F.G.W.C. (1992). Training strategies for attaining transfer of problem-solving skill in statistics: A cognitive load approach. *Journal of Educational Psychology, 84,* 429–434.

Rouiller, J. Z., & Goldstein, I. L. (1993). The relationship between organizational transfer climate and positive transfer of training. *Human Resource Development Quarterly, 4,* 377–390.

Ruona, W., Leimbach, M., Holton, E. F. III, & Bates, R. (2002). The relationship between learner reactions and predicted learning transfer among trainees. *International Journal of Training and Development, 6,* 218–228.
Seyler, D. L., Holton, E. F. III, Bates, R. A., Burnett, M. F., & Carvalho, M. A. (1998). Factors affecting motivation to use training. *International Journal of Training and Development, 2,* 2–16.
Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: HarperCollins.
Tracey, J. B., Tannenbaum, S. I., & Kavanaugh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology, 80,* 239–252.
Tziner, A., Haccoun, R. R., & Kadish, A. (1991). Personal and situational characteristics of transfer of training improvement strategies. *Journal of Occupational Psychology, 64,* 167–177.
Warr, P., & Bunce, D. (1995). Trainee characteristics and the outcomes of open learning. *Personnel Psychology, 48,* 347–375.
Werner, J. M., O'Leary-Kelly, A. M., Baldwin, T. T., & Wexley, K. N. (1994). Augmenting behavior-modeling training: Testing the effects of pre- and post-training interventions. *Human Resource Development Quarterly, 5,* 169–183.
Wexley, K. N., & Baldwin, T. T. (1986). Posttraining strategies for facilitating positive transfer: An empirical exploration. *Academy of Management Journal, 29,* 503–520.
Yamnill, S. (2001). *Factors affecting transfer of training in Thailand.* Unpublished doctoral dissertation, University of Minnesota.

Elwood F. Holton III is Jones S. Davis Distinguished Professor of Human Resource, Leadership and Organization Development, at Louisiana State University.

Hsin-Chih Chen is postdoctoral research associate in human resource development at Louisiana State University.

Sharon S. Naquin is executive director of the public management program and assistant professor of human resource development at Louisiana State University.

Considering the Limitation of Etic Approaches in Cross-Cultural Study

Wei-Wen Chang

Although until the late 1990s, people still debated whether national character exists and can be measured (Inkeles, 1997), many human resource development scholars have placed their concerns on comparing the similarities and differences among nations (Burba, Petroske, & Boyle, 2001; Kuchinke, 1999; Stephen, 1994). Cross-cultural comparison basically assumes that national cultures are measurable or comparable (etic). Although comparative study provides insights about cultural influence to HRD activities, researchers should also be aware of the limitation of the etic approach.

Emic and Etic

Emic and etic represent two focuses in cultural studies, and their distinctions are between the unique and the comparable and the specific and the general. The emic approach, widely applied by anthropologists, posits that each culture is unique. Emic attempts to reveal the picture of a specific culture. Conversely, the etic approach deems that although cultures are unique, they share some similarities and are comparable in some degree. Cross-cultural researchers mainly conducted this approach (Hofstede, 2001).

The Limitation of Etic Approaches

Cultural comparative study stands on an assumption that cultures to some degree are comparable (etic). However, researchers who conduct comparative studies should be cautious about the limitation of such an assumption. Surface cultural phenomena frequently are rooted in a set of beliefs that are implicit, requiring deeper exploration. Gardner's study (1989) illustrated this point (cited in Biggs, 1996). Gardner visited China several times to study the teaching of art. He found that compared to American children of a similar age, Chinese children demonstrated incredible skill in their drawing, but they drew only a few set models. This observation led him to the concepts of mimetic

Human Resource Development Quarterly, vol. 14, no. 4, Winter 2003